WE CLAIM:

1. Method for producing a ceramic coating of metallic and/or ceramic surfaces and products in reactors, process plants and combustion plants, characterized in that a mixture of fine-particle boron nitride, at least one inorganic binding agent of medium particle size in the nanometer range, and at least one solvent and/or water is applied onto the metallic and/or ceramic surfaces or the product, and the applied mixture is burnt into a coating through heating.

2. Method according to claim 1, characterized in that the surfaces of metallic pipe walls, ceramic pipe wall plates, stones and lining substances in reactors, process plants and combustion plants are provided with the coating.

3. Method according to claim 2, characterized in that the surfaces of parts of waste incinerators are provided with the coating.

4. Method according to claim 1, characterized in that the inorganic binding agent contains substantially Al_2O_3, AlO(OH), ZrO_2, Y-ZrO_2, TiO_2, SiO_2, Fe_2O_3 and/or SnO_2 or an associated precursor compound.

5. Method according to claim 1, characterized in that an organo-metallic compound is used as inorganic binding agent.

6. Method according to claim 5, characterized in that the organo-metallic compound contains a silane or siloxane compound.

7. Method according to claim 6, characterized in that the silane compound contains a mixture of tetraethoxysilane, trimethoxymethylsilane and silica sol.

8. Method according to claim 1, characterized in that the inorganic binding agent has an average particle size of <100nm, preferably <50nm, in particular <20nm.

9. Method according to claim 1, characterized in that the solvent contains substantially ethanol, 1-propanol, 2-propanol, 2-butoxyethanol and/or water.

10. Method according to claim 9, characterized in that the solvent contains a mixture of ethanol, 2-butoxyethanol and water.

11. Method according to claim 1, characterized in that burning-in of the applied mixture is carried out through heating during operation of the reactor, process plant or combustion plant.

12. Method according to claim 1, characterized in that burning-in of the applied mixture is carried out before operation start of the reactor, process plant or combustion plant through heating to at least 400°C.

13. Method for repairing a ceramic coating of metallic and/or ceramic surfaces and products in reactors, process plants and combustion plants, characterized in that a damaged coating is repaired through partial or complete application of the coating on the damaged coating in accordance with at least one of the claims 1 through 12.

14. Method according to claim 1, characterized in that the mixture is applied through rinsing, rolling, immersion and/or flooding.

15. Ceramic coating of metallic and/or ceramic surfaces in reactors, process plants and combustion plants, containing a molten mass or a sintered product of fine boron nitride and at least one inorganic binding agent of a medium particle size in the nanometer range.

16. Ceramic coating according to claim 15, which can be obtained through

a) application of a mixture of fine boron nitride, at least one inorganic binding agent of a medium particle size in the nanometer range and at least one solvent onto the metallic and/or ceramic surface; and
b) burning-in of the mixture.

17. Ceramic coating according to claim 15, characterized in that the inorganic binding agent has a medium particle size of <100nm, preferably <50nm, in particular <20nm.

18. Dirt-repellent coating of metallic and/or ceramic surfaces in reactors, process plants and combustion plants, which can be obtained through

a) application of a mixture of fine boron nitride, at least one inorganic binding agent of a medium particle size in the nanometer range and at least one solvent onto the metallic and/or ceramic surface; and
b) burning-in of the mixture.